10

FIG. 1

<u>12</u>

FIG. 2

18

STORAGE
DEVICE
84

DB
86

70

PROCESSOR
72

78
O/S

80
STACK

90
APPLICATION
DEVELOPMENT
BACK-END
PROCESS

MEMORY
74

76
I/O
INTERFACE

82

FIG. 3

FIG. 4

120

```xml
<?xml version="1.0" encoding="ISO-8859-1" ?>
<IDATA XMLUSER="username" XMLPSWD="password">

    <STPROC PROCNAME="StoredProcedureName">
        <PARAM  PTYPE="Parameter_Type1" future attributes="..."> paramvalue1</PARAM>
        <PARAM  PTYPE="Parameter_Type2" future attributes="..."> paramvalue2</PARAM>
        <PARAM  PTYPE="Parameter_Type3" future attributes="..."> paramvalue3</PARAM>
    </STPROC>

    <REC ACTION="SELECT" TABLENAME="table" LOCK="boolean" >
        <COL DCOL="column_name1" future attributes="..."></COL>
        <COL DCOL="column_name2" future attributes="..."></COL>
        <COL DCOL="column_name3" PKPOS="1" future attributes="...">value3</COL>
        <COL DCOL="column_name4" PKPOS="2" future attributes="...">value4</COL>
        <WHERE>column_name5 > column_name6 </WHERE>
        <SORTBY>column_name7 </SORTBY>
    </REC>

    <REC ACTION="INSERT" TABLENAME="table" LOCK="boolean">
        <COL DCOL="column_name1" future attributes="...">value1</COL>
        <COL DCOL="column_name2" future attributes="...">value2</COL>
        <COL DCOL="column_name3" PKPOS="1" future attributes="...">value3</COL>
        <COL DCOL="column_name4" PKPOS="2" future attributes="...">value4</COL>
    </REC>

    <REC ACTION="UPDATE" TABLENAME="table" LOCK="boolean">
        <COL DCOL="column_name1" future attributes="...">value1</COL>
        <COL DCOL="column_name2" future attributes="...">value2</COL>
        <COL DCOL="column_name3" PKPOS="1" future attributes="...">value3</COL>
        <COL DCOL="column_name4" PKPOS="2" future attributes="...">value4</COL>
    </REC>

    <REC ACTION="DELETE" TABLENAME="table" LOCK="boolean">
        <COL DCOL="column_name1" PKPOS="1" future attributes="...">value1</COL>
        <COL DCOL="column_name2" PKPOS="2" future attributes="...">value2</COL>
    </REC>

    <FutureRequestTag  Parameters>
        :
        :
    </FutureRequestTag>

</IDATA>
```
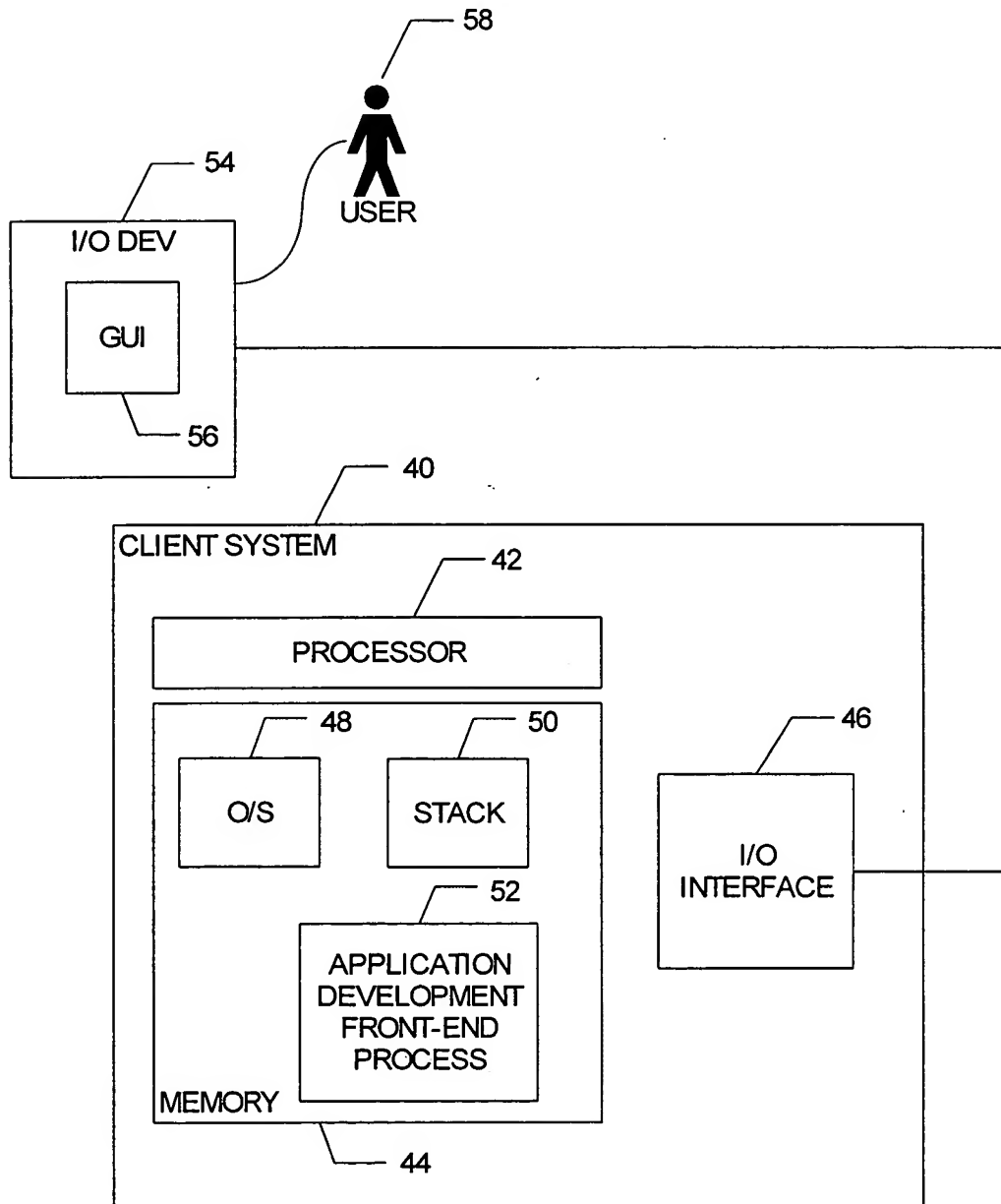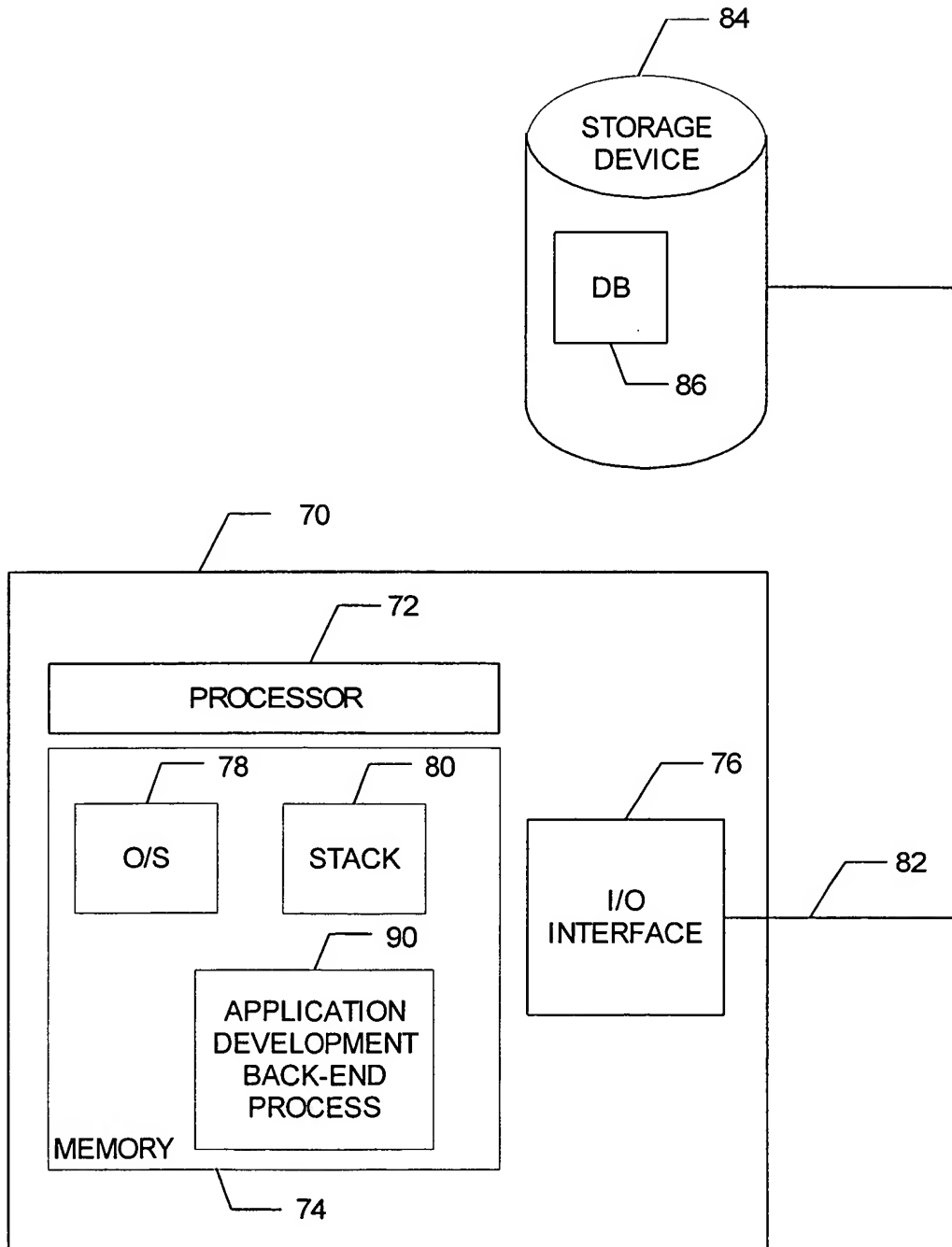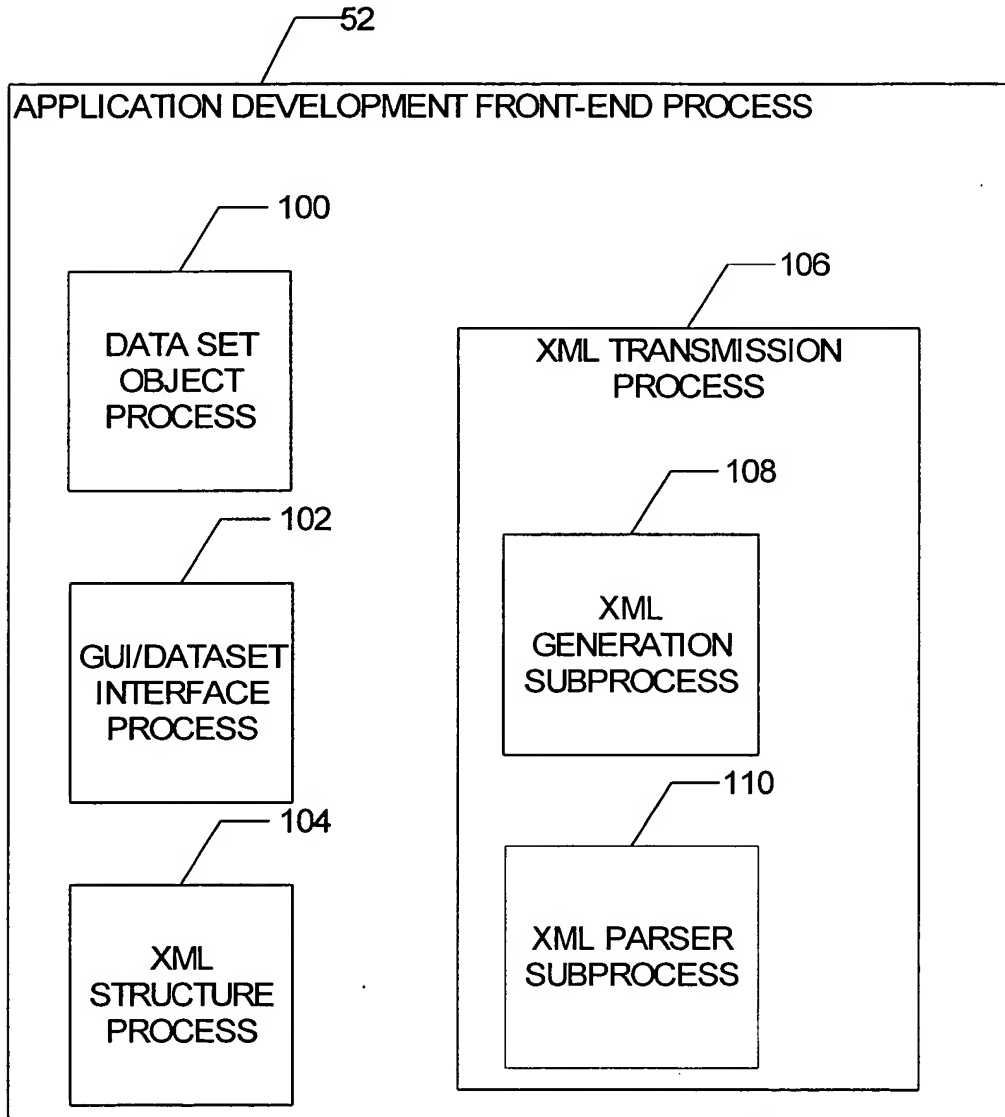
Stored Procedure Call

Database Select Call

Database Insert Call

Database Update Call

Database Delete Call

Future Request Call

FIG. 5

┌───┐
│   ┌─90   │
│ APPLICATION DEVELOPMENT BACK-END PROCESS   │
│   │
│   ┌─ 150   ┌─ 154   │
│ ┌──────────────┐   ┌──────────────┐   │
│ │   │   │   XML   │   │
│ │ XML PARSER │   │   WRAPPER   │   │
│ │   PROCESS   │   │   PROCESS   │   │
│ │   │   │   │   │
│ └──────────────┘   └──────────────┘   │
│   ┌─ 152   │
│ ┌─────────────────────────────────────┐   │
│ │   EXECUTION PROCESS   │   │
│ │   │   │
│ │   ┌─ 156   │   │
│ │   ┌──────────────┐   │   │
│ │   │   │   │   │
│ │   │ PRE-EXECUTION│   │   │
│ │   │   LOGIC   │   │   │
│ │   │ SUBPROCESS │   │   │
│ │   └──────────────┘   │   │
│ │   ┌─ 158   │   │
│ │   ┌──────────────┐   │   │
│ │   │POST-EXECUTION│   │   │
│ │   │   LOGIC   │   │   │
│ │   │ SUBPROCESS │   │   │
│ │   └──────────────┘   │   │
│ └─────────────────────────────────────┘   │
│   │
└───┘

FIG. 6

RAPID DEVELOPMENT IN A DISTRIBUTED APPLICATION
ENVIRONMENT

```
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<?xml version="1.0" encoding="ISO-8859-1" ?>
<IDATA XMLUSER="username" XMLPSWD="password">

    <ERROR><![CDATA[...Error Message...]]></ERROR>

    <STATUS>...StatusInformation...</STATUS>

    <STPROC PROCNAME="...procedurename..." >
        <RETVAL><![CDATA[...ReturnValue...]]></RETVAL>
    </STPROC>
    <TBL TABLENAME="tablename" >

        <DICT>
            <DCOL CNAME="columnname1" POS="1" DTYPE="datatype" ></DCOL>
            <DCOL CNAME="columnname2" POS="2" DTYPE="datatype" CALC="1" ></DCOL>
            <DCOL CNAME="columnname3" POS="3" DTYPE="datatype" PKPOS="1" ></DCOL>
        </DICT>
        <IRECSET>
            <REC NEW="0">
                <COL><![CDATA[...columndata...]]></COL>
                <COL><![CDATA[...columndata...]]></COL>
                <COL><![CDATA[...columndata...]]></COL>
            </REC>
        </IRECSET>
    </TBL>

    <FutureResponseTag   Parameters>
        ⋮
    </FutureResponseTag>

</IDATA>
```
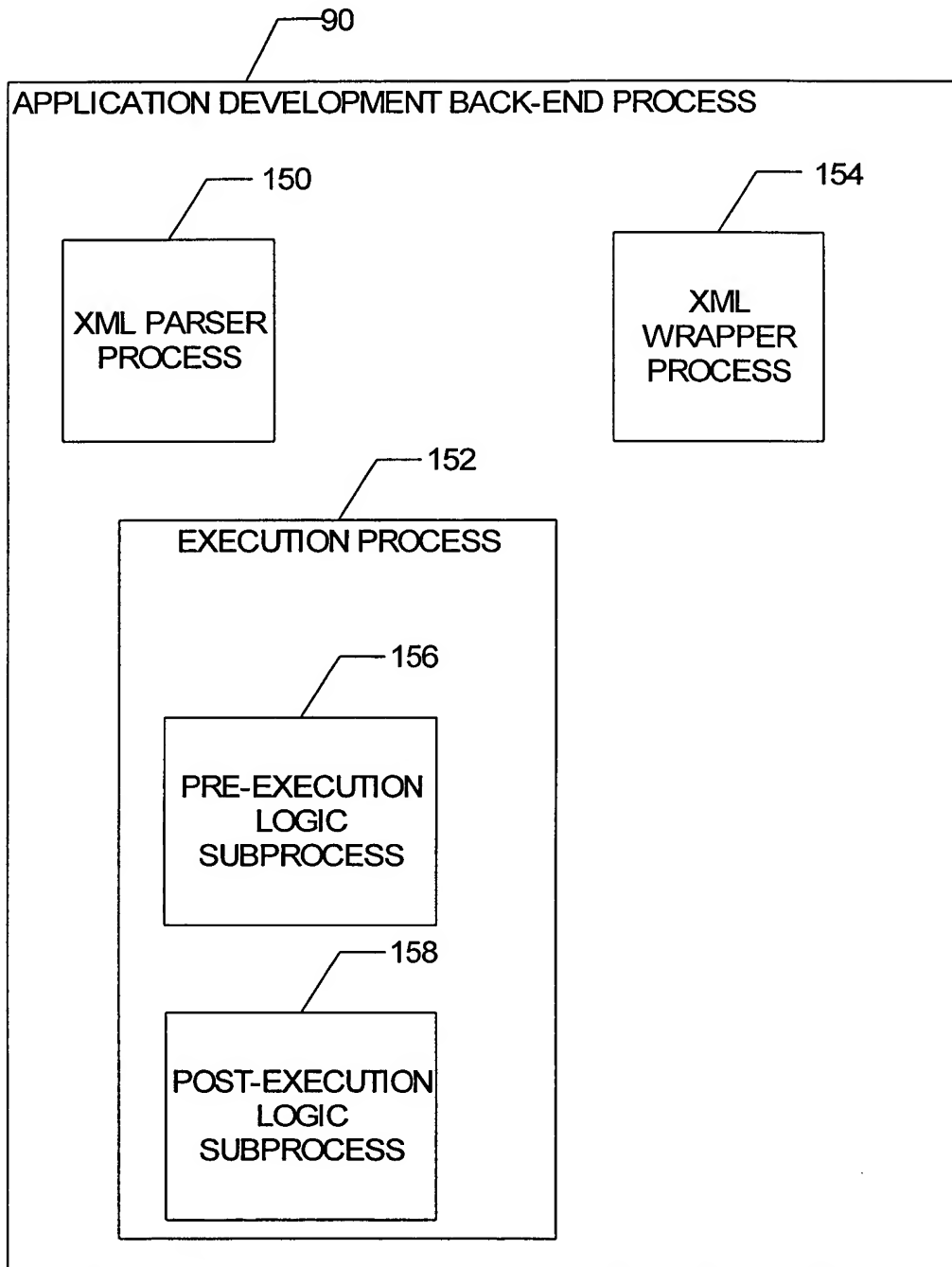
Error Messages
and Status Messages

Stored Procedure
Return Values

Database Call Response

Future Responses

FIG. 7